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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,240	01/25/2005	Adam Armitage	540-547	1604

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EXAMINER

WON, BUMSUK

ART UNIT PAPER NUMBER

2879

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/18/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

**Application No.**

10/522,240

**Applicant(s)**

ARMITAGE ET AL.

**Examiner**

Bumsuk Won

**Art Unit**

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 7-13, 15-18 and 20-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-13, 15-17 and 20-25 is/are rejected.
- 7) ☒ Claim(s) 18 and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 01/05, 09/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Specification***

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is suggested:  
Electron gun and electron beam window having heat sink and method of reducing heat thereof.

### ***Claim Objections***

**Claims 8-10, 12, 13, 15, 17, 18, 20, 21, and 23-26 are objected to because of the following informalities:**

Regarding claims 8-10, 12, 13, 15, 17, 18, 20, 21, and 23-26, “A” or “An” of the first word of the claim should be “The”. Appropriate correction is required.

**Claims 17 and 18 are objected to because of the following informalities:**

Regarding claims 17 and 18, “in the case where” is confusing whether the methods have the electron beam comprises a single pane and plural panes or not. For examining purpose, it will be assumed that the electron beam does comprise a single pane or plural panes. Appropriate correction is required.

**Claims 22-26 are objected to because of the following informalities:**

Regarding claim 22, “said electron gun being operable to produce” is confusing whether the electron gun is producing or not producing. For examining purpose, the limitation will be interpreted as “said electron gun which produces”. Also, “to direct” in line 3 will be interpreted as “directs”. Appropriate correction is required. Claims 23-26 are objected to due to their claim dependency.

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Regarding claim 22, “means operable to cause” will be interpreted as “means that causes”  
Appropriate correction is required. Claims 23-26 are objected to due to their claim dependency.

Regarding claims 25 and 26, “means operable to cause” will be interpreted as “means that causes” Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 7-13, 15, 20, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Bachmann (2002/0048345) which is a prior art in the IDS.**

**Regarding claim 7**, Bachmann discloses an electron beam window (figures 1-6, 8) comprising: diamond pane (10, 300a) that transmit electron beam, and the panes are carried by a support (4) arranged to dissipate heat generated in the panes by the passage of an electron beam. The examiner notes that the claim limitation of the support being arranged to dissipate heat generated in the panes by the passage of an electron beam is drawn to a functional claim limitation which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a functional claim limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject functional claim limitation is not afforded patentable weight (MPEP 2113).

**Regarding claim 8**, Bachmann discloses the support is connected to a heat sink (2).

**Regarding claim 9**, Bachmann discloses the heat sink is secured to a surface of the support without obscuring the panes (figures 1 and 2).

**Regarding claim 10**, Bachmann discloses the support comprises a diamond disc (1) that defines the panes and has a integral rim (figures 1 and 2).

**Regarding claim 11**, Bachmann discloses an electron beam window (figures 1, 2, 4-6) comprising: a single diamond pane (10, 300a) that has a transverse direction (outside diameter) that is more than twice the transverse direction of the electron beam (the perpendicular length to the diameter), the pane is carried by a support (4) arranged to dissipate heat generated in the panes by the passage of an electron beam, and the support comprises a diamond disc (1) that defines the panes and has a integral rim (figures 1 and 2). The examiner notes that the claim limitation of the support being arranged to dissipate heat generated in the panes by the passage of an electron beam is drawn to a functional claim limitation which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a functional claim limitation.

**Regarding claim 12**, Bachmann discloses a heat sink is shrunk onto the rim (figures 1-2).

**Regarding claim 13**, the examiner notes that the claim limitation of the heat sink being diffusion bonded is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (MPEP 2113).

**Regarding claim 15**, Bachmann discloses an electron gun (figure 8) provided with an electron beam window of claim 7. The examiner notes that the claim limitation of the an electron gun being provided with an electron beam window of claim 7 is drawn to an intended use claim limitation which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by an intended use claim limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject intended use claim limitation is not afforded patentable weight (MPEP 2113).

**Regarding claim 20**, Bachmann discloses a heat sink is shrunk onto the rim (figures 1-2).

**Regarding claim 21**, the examiner notes that the claim limitation of the heat sink being diffusion bonded is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (MPEP 2113).

**Claims 16 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Stieber (4,293,772) which is a prior art in the IDS.**

**Regarding claim 16**, Stieber discloses a method for reducing the heat of an electron beam window by an electron beam in an electron gun (column 2, line 65 – column 3, line 5) comprising: moving the electron beam relative to the electron beam window (column 2, line 65 – column 3, line 5).

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**Regarding claim 22**, Stieber discloses an electron gun (figures 1-4) comprising: an electron beam window (4) positioned between vacuum chamber (2) and a higher pressure chamber (not referenced), the electron gun which produce an electron beam within the vacuum chamber and directs the electron beam through the electron beam window into the higher pressure chamber (figure 1), and means that causes relative movement of the electron beam laterally of the electron beam window to limit heating of the portion of the electron beam window transmitting the electron beam (column 2, line 65 – column 3, line 5).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 17 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stieber (4,293,772) in view of Bachmann (2002/0048345).**

**Regarding claim 17**, Stieber discloses causing continuous relative movement transversely between the electron beam and the pane (column 2, line 65 – column 3, line 5).

Stieber does not disclose the electron beam window comprises a pane having a transverse dimension that is more than twice the transverse dimension of the electron beam.

Bachmann discloses a method of reducing the heating of the electron beam window by an electron beam in an electron gun, and an electron beam window (figures 1, 2, 4-6) comprising: a single diamond pane (10, 300a) that has a transverse direction (outside diameter) that is more

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than twice the transverse direction of the electron beam (the perpendicular length to the diameter), for the purpose of enhancing thermal property.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have an electron beam window comprises a pane having a transverse dimension that is more than twice the transverse dimension of the electron beam disclosed by Bachmann in the method disclosed by Stieber, for the purpose of enhancing thermal property.

**Regarding claim 23**, Stieber discloses all the claim limitations except for the electron beam window being formed from diamond.

Bachmann discloses an electron gun (figure 8) having an electron beam window being formed from diamond (figures 1-2, 10), for the purpose of enhancing thermal property.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have an electron beam window being formed from diamond disclosed by Bachmann in the electron gun disclosed by Stieber, for the purpose of enhancing thermal property.

**Regarding claim 24**, Bachmann discloses the electron beam window is carried by a support (4) arranged to dissipate heat generated in the panes by the passage of an electron beam. The examiner notes that the claim limitation of the support being arranged to dissipate heat generated in the panes by the passage of an electron beam is drawn to a functional claim limitation which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a functional claim limitation.

Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject functional claim limitation is not afforded patentable weight (MPEP 2113).



**Regarding claim 25**, Stieber discloses causing continuous relative movement transversely between the electron beam and the pane, whereby the electron beam will be transmitted through changing areas of the pane (column 2, line 65 – column 3, line 5).

Stieber does not disclose the electron beam window comprises a pane having a transverse dimension that is more than twice the transverse dimension of the electron beam.

Bachmann discloses an electron gun having an electron beam window (figures 1, 2, 4-6) comprising: a single diamond pane (10, 300a) that has a transverse direction (outside diameter) that is more than twice the transverse direction of the electron beam (the perpendicular length to the diameter), for the purpose of enhancing thermal property.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have an electron beam window comprises a pane having a transverse dimension that is more than twice the transverse dimension of the electron beam disclosed by Bachmann in the electron gun disclosed by Stieber, for the purpose of enhancing thermal property.

***Allowable Subject Matter***

Claims 18 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter:

**Regarding claim 18**, the prior art of record does not teach or suggest the invention of a method of reducing the heating of an electron beam window by an electron beam in an electron gun having plurality of panes with a method of indexing the electron beam relative to the panes

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whereby the electron beam being transmitted for a limited time by each pane in sequence, along with other claimed limitations.

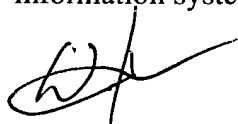
**Regarding claim 26**, the prior art of record does not teach or suggest the invention of an electron gun having plurality of panes with a means of indexing the electron beam relative to the panes whereby the electron beam being transmitted for a limited time by each pane in sequence, along with other claimed limitations.

***Contact information***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bumsuk Won whose telephone number is 571-272-2713. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Bumsuk Won  
Patent Examiner



**JOSEPH WILLIAMS**  
**PRIMARY EXAMINER**